

REMARKS

I. Formalities

Applicant thanks the Examiner for considering the references listed on the PTO/SB/08 Forms submitted with the Information Disclosure Statements of August 25, 2006 and June 25, 2007. Also, Applicant thanks the Examiner for acknowledging receipt of Applicant's claim for foreign priority and receipt of the certified copy of the priority document.

However, the Examiner has not indicated acceptance of the drawings filed on August 25, 2006. Applicant respectfully requests that the Examiner indicate acceptance of these drawings in the next Office Action.

II. Status of the Application

By the present Amendment, Applicant is amending claim 39. In addition, Applicant is adding new claim 58 to recite features of the invention as disclosed in the specification. Support for these amendments can be found *at least* in Fig. 2 and paragraphs [0034] and [0041] of the present specification. No new matter is added.

Accordingly, claims 39-58 are all the claims pending in the application. Claims 39-47 and 52-57 have been rejected. Claims 48-51 would be allowable if rewritten in independent form. The present Amendment addresses each point of objection and rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

III. Claim Objections

The Examiner has objected to claims 42-44 because they recite negative limitations. For example, claim 42 recites that "no zoom device is arranged between the primary light source and the first raster arrangement." However, Applicant notes that the "current view of the courts is that there is nothing inherently ambiguous or uncertain about a negative limitation. So long as

the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. §112, second paragraph.” *See* MPEP §2173.05(i).

Claim 42 further limits claim 39 such that the illumination system does not include a zoom device between the primary light source and the first raster arrangement. Similarly, claim 43 further limits claim 39 such that the illumination system does not include an axicon system between the primary light source and the first raster arrangement. Further, claim 44 further limits claim 39 such that the illumination system does not include a variably adjustable optical component between the primary light source and the first raster arrangement. Consequently, the boundaries of the patent protection sought are set forth definitely, albeit negatively. Therefore, Applicant respectfully requests that the Examiner withdraw the objection to claims 42-44.

In addition, the Examiner has objected to claim 51 because the Examiner alleges that “10 and 22” should be followed by a unit. Applicant respectfully disagrees. Claim 51 recites that “the number of raster elements of the first raster arrangement in the plane lies between 10 and 22.” Here “10 and 22” refer to pure numbers that do not have units. For example, as recited in claim 51, there may be 15 raster elements in the first raster arrangement. Therefore, Applicant respectfully requests that the Examiner withdraw the objection to claim 51.

IV. Claim Rejections Under 35 U.S.C. §§ 102(b) and 103(a)

Claims 39-45, 47, and 53-57 stand rejected under 35 U.S.C. §§ 102(b) as allegedly being anticipated by U.S. Patent No. 6,252,647 to Shiraishi. Claims 46 and 52 stand rejected under 35 U.S.C. §§ 103(a) as allegedly being unpatentable over Shiraishi in view of U.S. Publication No. 2001/0028925 to Moshrefzadeh et al. (hereinafter “Moshrefzadeh”). Applicant is amending independent claim 39 to clarify that the illumination system comprises, *inter alia*, “at least one diffractive optical element generating an angular distribution whose far field has separate or

contiguous luminous zones which are coordinated in terms of form and size with the form and size of individual first raster elements of the first raster arrangement" (emphasis added). In rejecting claim 39, the Examiner maintains that the diffraction grating pattern plate 12 shown in Fig. 29 of Shiraishi corresponds to the claimed diffractive optical element. Applicant respectfully disagrees.

Fig. 29 of Shiraishi shows a projection type exposure apparatus with two fly eye lens groups 91A and 91B. The diffraction grating pattern plate 12 of Shiraishi divides incident light into a plurality of diffracted light components (two of which are shown in Fig. 29) at different angles with respect to the optical axis AX. The plurality of diffracted light components form a light distribution that is concentrated on the fly eye lens groups 91A and 91B (col. 35, lines 44-46). The pitch and directivity of the diffraction grating pattern plate 12 are determined to concentrate the light distribution on the positions of the fly eye lens groups 91A and 91B (col. 36, lines 55-58).

Based on the above description, Applicant submits that the angular spectrum of rays generated by the diffraction grating pattern plate 12 of Shiraishi results in a light distribution at the light-source-side focal surfaces 91a of the fly eye lens groups 91A and 91B that has a cross-sectional shape that essentially matches the cross-sectional shape of the fly eye lens groups 91A and 91B. However, claim 39 recites that the diffractive optical element generates luminous zones, each of which has a form and size that matches the form and size of an individual first raster element within the first raster arrangement. Shiraishi is silent with regard to the structure of the light distribution at the light-source-side focal surfaces 91a of the fly eye lens groups 91A and 91B. In particular, Shiraishi does not teach or suggest that the diffraction grating pattern

plate 12 generates the claimed luminous zones that match individual lens elements within the fly eye lens groups 91A and 91B.

Applicant submits that claim 39 distinguishes over Shiraishi at least by virtue of the aforementioned differences, as well as its additionally recited features. In addition, Moshrefzadeh fails to remedy the deficient teachings of Shiraishi. Therefore, claim 39 is patentable over Shiraishi and Moshrefzadeh. Further, claims 40-47 and 52-57 are patentable over Shiraishi and Moshrefzadeh at least by virtue of their dependencies on claim 39, as well as their additionally recited features.

With further regard to claim 40, Applicant submits that Shiraishi fails to teach or suggest that “the diffractive optical element sets a two-dimensional intensity distribution in the first surface such that all first raster elements associated with a predetermined exit light distribution are at least essentially completely illuminated by the intensity distribution, while first raster elements which do not contribute to the exit light distribution remain at least essentially unilluminated.” As shown in Fig. 29 of Shiraishi, a spatial filter 16 is used to shield unnecessary luminous fluxes that are generated by the diffraction grating plate 12 and pass by the fly eye lens groups 91A and 91B (col. 32, lines 63-67). Accordingly, the light distribution incident on the light-source-side focal surfaces 91a of the fly eye lens groups 91A and 91B from the diffraction grating pattern plate 12 has a cross-sectional area that is *greater than* the cross-sectional area of the fly eye lens groups 91A and 91B. In effect, the light distribution from the diffraction grating pattern plate 12 *overfills* the fly eye lens groups 91A and 91B, and the spatial filter 16 prevents this unnecessary radiation from reaching the illumination field. Therefore, there are no elements within the fly eye lens groups 91A and 91B of Shiraishi that are unilluminated by light from the diffraction grating pattern plate 12, as recited in claim 40.

V. Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 48-51 would be allowable if rewritten in independent form. However, Applicant elects to hold the rewriting of these claims in abeyance at this time.

VI. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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